

The claims remaining in the application are 1, 3-5, 10-13, 15-17, and 22-24.

REMARKS

The Applicant would like to thank the Examiner for the quick and courteous Office Action and particularly for the indication of allowability of claim 23 therein if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

The Applicant is further appreciative of the Examiner's consideration of Applicant's previous arguments and the indication that the Applicant's amendment distinguished over the JP reference.

In reviewing the specification and claims in preparing the subject Amendment, it was discovered that the compound *hexamethylenetetramine* was inadvertently referred to as "tetramethylenehexamine". The spelling of this compound has been corrected in line 15 of page 4, and in independent claims 1, 12 and 13 herein. It is respectfully submitted that this change is to correct an inadvertent error and does not constitute an improper insertion of new matter. Support is found in the fact that no such compound as "tetramethylenehexamine" exists, and there are no references to it in the literature. On the other hand, it is simple and easy to find references to the correct compound hexamethylenetetramine in chemical dictionaries (e.g. Hawley's Condensed Chemical Dictionary, Eleventh Edition), catalogs (e.g. Aldrich), and in a search of the World Wide Web. It is thus respectfully submitted that this correction at all occurrences is proper. These corrections are made to correct an inadvertent clerical error and not for any reason related to patentability.

Rejection Under 35 U.S.C. §112, Second Paragraph

The Examiner has rejected claim 12 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the compounds in the last three lines of the claim, such as piperidines, piperazines, etc. are contended to be inclusive of compounds which are not alkyl or aryl amines as defined in lines 7-13 of the claim.

The Applicant would respectfully direct the Examiner's attention to the amendments to claim 12 herein where the most of the list of compounds previously in the last three lines of the claim have been moved to the middle portion of the claim as further alternatives in the Markush group further defining the additive. It is respectfully submitted that with this change the compounds are not required to comply with the formula R¹R²R³N in lines 7-13 of the claim. It is respectfully submitted that this change overcomes the instant rejection. Reconsideration is respectfully requested.

Previous Rejection Under 35 U.S.C. §102(b) Over Thomas

The Examiner has rejected claims 1, 3-5, 9, 10, 12, 13, 15-17, 21, and 22 under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Pat. No. 4,836,941 to Thomas.

The Examiner finds that Thomas teaches zinc halide and calcium halide brines having densities within the scope of the present invention, wherein hydroxylamines (polyalkoxylated amines) are used as corrosion inhibitors. The Examiner thus contends that the present invention is anticipated by Thomas.

In reply to the Applicant's amendment, the Examiner noted that with respect to Thomas, this reference teaches hydroxylamine compounds which are within the scope of applicant's claimed species. The Examiner asserts that such compounds when added to such solutions would increase the pH of the solutions, as is well known for amino type compounds.

The Applicant must respectfully traverse.

A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047, 34 U.S.P.Q.2d 1565 (Fed. Cir.), cert. denied, 116 S.Ct. 516 (1995).

The Examiner's attention is respectfully directed to the amendments to the claims herein where all of the independent claims have been amended to remove "hydroxylamine" therefrom. The Examiner finds that Thomas teaches hydroxylamines (polyalkoxylated amines) are used as corrosion inhibitors. Thus, it is respectfully submitted that the amended claims are not anticipated by Thomas for this reason alone. The single prior art reference does not disclose each and every limitation of the claim.

Furthermore, all of the independent claims herein have been amended to recite that the corrosion inhibition of the brine is increased by the additive absorbing acid. Support for this recitation is found in the application as filed on page 3, line 11 thereof and thus does not constitute an improper insertion of new matter. It is additionally respectfully submitted that Thomas does not teach that the claimed additives raise the pH of the brine and increase corrosion inhibition of the brine by absorbing acid. Once again, the single prior art reference does not disclose each and every limitation of the claim. For this additional reason alone, the instant rejection must fail.

It is thus respectfully submitted that an anticipation rejection of the claims has been avoided due to the amendments to the claims. Each and every limitation of the claims is not taught by Thomas in two respects. Applicant need only demonstrate that the reference is lacking in teaching *one* limitation of the claims. Reconsideration is respectfully requested.

Previous Rejection Under 35 U.S.C. §102(e) Over Mishra

The Examiner in the parent application has rejected claims 1, 3, 10-13, 15, 22 and 24 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Pat. No. 5,891,225 to Mishra, et al.

The Examiner finds that Mishra, et al. teaches a brine which comprises a halide salt, such as calcium chloride at levels up to 42 weight percent, wherein a hydroxy carboxylate and polyalkoxylated amine (a type of hydroxylamine) are used as corrosion inhibitors. The Examiner contends that a brine level of 42% by weight would clearly be greater than the 11 lbs/gal taught in the claims.

In reply to the Applicant's amendment, the Examiner noted that with respect to Mishra, et al., this reference teaches hydroxylamine compounds which are within the scope of applicant's claimed species. The Examiner asserts that such compounds when added to such solutions would increase the pH of the solutions, as is well known for amino type compounds.

Again, the Applicant must respectfully traverse.

A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, *id.*

The Examiner's attention is again respectfully directed to the amendments to the claims herein where all of the independent claims have been amended to remove "hydroxylamine" therefrom. The Examiner finds that Mishra, et al. teaches polyalkoxylated amine (a form of hydroxylamine) and a hydroxy carboxylate are used as corrosion inhibitors. The claims no longer encompass polyalkoxylated amines or hydroxylamine. Thus, it is respectfully submitted that the amended claims are not anticipated by Mishra, et al. for this reason alone. The single prior art reference does not disclose each and every limitation of the claim.

Furthermore, as previously established, all of the independent claims herein have been amended to recite that the corrosion inhibition of the brine is increased by the additive absorbing acid. It is additionally respectfully submitted that Mishra, et al. does not teach that the claimed additives raise the pH of the brine and increase corrosion inhibition of the brine by absorbing acid. Once again, the single prior art reference does not disclose each and every limitation of the claim. For this additional reason alone, the instant rejection must fail.

It is thus respectfully submitted that an anticipation rejection of the claims has been overcome due to the amendments to the claims. Each and every limitation of the claims is not taught by Mishra, et al. in two respects. Applicant need only demonstrate that the reference is lacking in teaching *one* limitation of the claims. Reconsideration is respectfully requested.

Previous Rejection Under 35 U.S.C. §102(e) Over Beazley, et al.

The Examiner has rejected claims 1-3, 12, 13, and 15 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Pat. No. 5,935,487 to Beazley, et al.

The Examiner finds that Beazley, et al. teaches a brine which comprises calcium chloride, and a corrosion inhibitor of a diethanolamide product, which is a type of hydroxylamine, referring to claims 1-4. Beazley, et al. is seen by the Examiner to exemplify calcium chloride brines comprising 35 weight percent of the salt, which would clearly have greater than 11 lbs/gal density.

Once more, the Applicant must respectfully traverse.

A patent claim is anticipated, and therefore invalid, only when a single prior art reference discloses each and every limitation of the claim. *Glaxo Inc. v. Novopharm Ltd.*, *id.*

The Examiner's attention is once more respectfully directed to the amendments to the claims herein where all of the independent claims have been amended to remove "hydroxylamine" therefrom. The Examiner finds that Beazley, et al. teaches a diethanolamide product, which is asserted to be a type of hydroxylamine. The claims no longer encompass hydroxylamine and thus diethanolamide products. Thus, it is respectfully submitted that the amended claims are not anticipated by Beazley, et al. for this reason alone. The single prior art reference does not disclose each and every limitation of the claim.

Furthermore, as previously established, all of the independent claims herein have been amended to recite that the corrosion inhibition of the brine is increased by the additive absorbing acid. It is additionally respectfully submitted that Beazley, et al. does not teach that the claimed additives raise the pH of the brine and increase corrosion inhibition of the brine by absorbing acid. Once again, the single prior art reference does not disclose each and every limitation of the claim. For this additional reason alone, the instant rejection must fail.

It is thus respectfully submitted that an anticipation rejection of the claims has been overcome due to the amendments to the claims. Each and every limitation of the claims is not taught by Beazley, et al. in two respects. Applicant need only demonstrate that the reference is lacking in teaching *one* limitation of the claims. Reconsideration is respectfully requested.

Previous Rejection Under 35 U.S.C. §103(a) Over Atkinson

The Examiner has rejected claims 1, 3, 10, 12, 13, 15, and 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Pat. No. 5,846,450 to Atkinson for reasons of obviousness.

The Examiner finds that Atkinson teaches a brine which comprises formates, such as potassium formate, and which can further comprise water, ammonia and corro-

sion inhibitors such as triazoles. The levels of as high as 70% potassium formate would result in brines within the density level of greater than 11 lbs/gal. Atkinson is seen by the Examiner to teach that combinations of water and ammonia may be used as the solvent. The Examiner admits that Atkinson differs in that a combination of water and ammonia as the solvent is not disclosed in an example. However, the Examiner contends that it would be obvious to vary the amount of ammonia and water as a combination solvent, including within the concentration ranges of the present invention, in the invention of Atkinson, given the teaching of Atkinson that such combinations may be used as solvents, and may be used to provide specific refrigerant vapor. The Examiner further alleges that the use of triazoles as corrosion inhibitors in the brine of Atkinson would be obvious to one of ordinary skill in the art, given the teaching of Atkinson that such triazoles are useful for corrosion inhibition in the brine. Such triazoles would be encompassed by the teaching of azoles by the claims.

In response to the Applicant's previous arguments and amendments, the Examiner contends that the use of a combination of ammonia and water would be taught to one of ordinary skill in the art, and is part of the claimed invention. The Examiner finds that ammonia would raise the pH of the solution. Although the Examiner admits that Atkinson does not add the ammonia for the same reason as Applicant, the Examiner contends that this is not a patentable difference since case law has held the such reason for addition is not a patentable distinction, citing *In re Jones*, *In re Mod*, and *In re Lindner*.

The Applicant must respectfully traverse.

To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992).

Atkinson is concerned with an absorbent for use in absorption refrigeration systems, air conditioning systems, heat pumps or dehumidifiers that is primarily a solution of potassium formate. The absorbent is generally water-based but may also be ammonia or methanol (Abstract; claims, and elsewhere). The task of the absorbent is to absorb vapor (column 1, lines 20-31 and claims).

The Examiner's attention is again directed to the fact that all of the independent claims herein have been amended to recite that the corrosion inhibition of the brine is increased by *the additive absorbing acid*. It is additionally respectfully submitted that Atkinson does not teach or suggest that the claimed additives raise the pH of the brine and increase corrosion inhibition of the brine by *absorbing acid*. Indeed, Atkinson does not mention or suggest acid as a component or risk of his system at all.¹ It is respectfully submitted that Atkinson cannot teach or suggest the inclusion of acid in their brine fluids, and thus the instant composition claims, as amended, are not *prima facie* obvious therefrom. Additionally, Atkinson cannot teach or suggest or propose absorbing acid in the amended method claims herein since Atkinson speaks of no such process, and in fact does not speak of acid.

In the claimed invention, the ammonia or amine absorbs or neutralizes the acid present, as evidenced by the fact that the pH of the brine is raised. If ammonia were simply used as a solvent, as the Examiner finds Atkinson teaches, the pH would not change. As the Examiner admits, Atkinson is silent on a rise in pH. Even if the pH does change in Atkinson (and the Applicant is not admitting that it does, it would not be due to absorbing acid since no acid is taught as present in Atkinson.

For additional information and explanation (and without limiting the claims), the Examiner's attention is respectfully directed to page 2, lines 18-21 of the application as filed, "The addition of an amine or ammonia (or compound capable of generating amine or ammonia) to a high density brine of sufficient salt content, e.g. zinc bromide, in a controlled manner *has been discovered to reduce the acidity of the zinc solution.*" (Emphasis added.) Please also see page 3, lines 4-11, particularly 9-11, which is the basis for the added recitation to the independent claims herein: "While not wishing to be limited to a particular mechanism or explanation of how the invention operates, *the amine may be understood as one which is capable of absorbing some of the acid.*" (Emphasis added.) Further, please see page 4, lines 10-16, in particularly 10-12: "As noted, compounds capable of releasing or generating a neutralizing compound, such as ammonia, an

¹ The only places in Atkinson where the word "acid" appears is as part of the term "molybdenic acid corrosion inhibitor" in the brief description of J5 3060-751 in column 2, lines 20-24 of the prior art discussion, which references are not relevant to the teachings of Atkinson or the claims at issue.

amine, or a salt thereof, are suitable additives as well." Finally, the Examiner's attention is respectfully directed to page 6, lines 8-12:

The lower acidity achieved by the invention may result from simple acid-base neutralization, or may possibly arise from ammonia forming complexes with zinc suppressing the hydrolysis of the complexed water molecules. However, it will be understood that the invention is not limited to any particular explanation of the mechanism by which it might work.

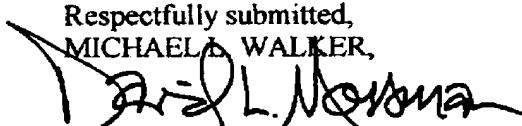
It is respectfully submitted that Atkinson does not suggest, teach or propose absorbing acid, an explicit raise in pH, and its consequence of corrosion inhibition as recited in the amended composition and method claims.

Applicant again respectfully submits that Atkinson does not teach, hint or suggest that his potassium formate absorbent solutions contain or should contain acid. Indeed, the Applicant respectfully submits that the pH of Atkinson's formate solutions will be above 7.

It is thus respectfully submitted that for all of these reasons a *prima facie* 35 U.S.C. §103 rejection has not been made. Reconsideration of the claims is respectfully requested.

It is respectfully submitted that the amendments and arguments presented above overcome all of the rejections. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is invited to call the Applicants' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
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